Energy efficiency and sustainability in ports

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What is a sustainable port?
Common themes and principles of responsible businesses and international organizations

- Sustainability includes three dimensions: economic, social and environmental.
- Sustainability is not a phase or a fashion - it is a necessity.
- It is equivalent to being competitive in the long term.
- Sustainability must be measurable (benchmark).
- It requires proactive approaches.
- Sustainability can only be reached when public and private sector co-operate.
- Sustainability means that organizations need to reach beyond their organizational boundaries (co-ordination, we cannot do it alone).
why should sustainability be discussed in the context of ports?

- increasing energy costs
- infrastructure investment
- carbon footprint
- efficiency and competitiveness
- investment into energy infrastructure
- social costs (accidents, security)
- long term economic efficiency
- human capital and resource management

sustainability of ports
To reach efficient, sustainable and coordinated port performance the practitioner and governments need:

- Measurable outcomes;
- Commitment from the boardroom to the shop-floor;
- Effective and predictable public administration and policies;
- Collaboration;
- CSR (corporate social responsibility).
A wider set of measures of performance is necessary?

- **Operational aspects**: asset performance, measuring capacity utilization of infrastructure.
- **Financial aspects**: considering revenue from ships cargo, labour costs, capital equipment costs.
- **Asset performance, measuring capacity utilization of infrastructure**.
- **Emissions**.
- **Water**.
- **Energy**.
- **Social**.
New data and measures are not simple

- LNG
- LPG
- diesel
- electricity
- blue water
- green water
- grey water
- virtual water
- CO2
- NOx
- black carbon
- SOx
- energy
- water
- emissions
Relevant certifications

- ISO 14001: this is a group of management system standards which are applied to improve the environmental performance in organizations.
- Green Ports: a certification that shows balancing between environmental protection and economic demand.
- Ecoports: This is integration between two concepts: effective environmental and port management.
- ISO 50001 - Energy management standards target to use energy efficiently through the development of an energy management system (EnMS).
- CEN 16258
- GHG Protocol (adopted by ISO 14064-1)
- ISO 14046 – Water footprint
example: an activity based approach to allocate energy consumption

Source: Spengler 2015
Example: new collaborations - Chile

new tools

Sustainable Performance Monitor

There is a continued need to improve the performance of terminals to make them not only more competitive, but also more sustainable. The concept of sustainability has been recognized by industry to be an important contributor to the firm-specific competitive advantage.

This independent research initiative aims to identify best practice and performance examples in the port sector to establish a set of global benchmarking indicators.

To support terminals and create direct value added to the participants this online tool allows the terminals to benchmark themselves against the other terminals participating in the initiative in key strategic areas: e.g. productivity, emissions, energy efficiency, and water consumption.

The tool is being developed at the University of Applied Sciences Bremen, Germany. In collaboration with the Universidad de los Andes, Colombia and supporting research at the Economic Commission for Latin America and the Caribbean, the Global Logistics Emissions Control and private sector entities (global and local terminal operators) among others.

Currently, the initiative counts with the participation of over 140 terminals from four continents.

The initiative aims to:
- a. provide the participating terminals with an online tool that allows for managing and analyzing energy efficiency and productivity in the terminal;
- b. monitor and improve the data regarding productivity, water and energy consumption, as well as efficiency and other KPIs;
- c. The applied methodology has been developed by United Nations Economic Commission for Latin America and the Caribbean (ECLAC) and the University of Applied Sciences Bremen, Germany, as part of the efforts to reach the Sustainable Development Goals (SDGs) and to support countries and companies to improve and benchmark their performance under certain sustainability criteria.

All data are treated strictly confidential. All data at the individual terminal level obtained through the initiative will be stored or de-identified. Under no circumstances will the identities be made available to individuals.

For further information please contact us at contact@spm-terminals.com

Visit: https://spm-terminals.com
Median litres of diesel equivalent consumed for handling one dry box (excluding reefer consumption), by country, 2012-2015

<table>
<thead>
<tr>
<th>Country</th>
<th>Liters Diesel Equivalent / Dry Box</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>10.0</td>
</tr>
<tr>
<td>Brazil</td>
<td>10.6</td>
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<tr>
<td>Chile</td>
<td>13.4</td>
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<td>Colombia</td>
<td>12.1</td>
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<tr>
<td>Mexico</td>
<td>7.1</td>
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<tr>
<td>Panama</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Source: Authors based on Wilmsmeier and Spengler (2016) and ECLAC Infrastructure Services Unit
Median litres of diesel equivalent consumed for handling one dry box (excluding reefer consumption), by type and size of terminal, years 2012-2015

Source: Authors based on Wilmsmeier and Spengler (2016) and ECLAC Infrastructure Services Unit
Note: The calculations are based on data for 25 terminals in 8 countries
Median litres of diesel equivalent consumed per activity cluster (excluding reefer cooling), 2012-2015

Source: Authors based on Wilmsmeier and Spengler (2016) and ECLAC Infrastructure Services Unit
Note: The calculations are based on data for 31 terminals in 16 countries
Next steps for moving ahead

- strengthen concerted effort of public and private sector
- further develop and use tools to gather new data
  - Water
  - Energy
  - Emissions, and
  - Social indicators
- collaborate towards a new standard of information
- can we walk the talk of a sustainable future?
questions?

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